

ABSTRACT OF THE DISCLOSURE

A method is provided for forming items from ecoceramic-based silicon-carbide. A wood preform is machined to a general shape having over- or undersized dimensions. The preform is pyrolyzed to transform the wood of the preform to a porous, carbonaceous material that retains the general shape of the preform. The preform is then machined to final, net-shape dimensions and immersed in liquid silicon or silicon alloy that penetrates and infuses the preform. The infused preform is held at a temperature sufficient to cause the transformation of the material in the preform to silicon carbide, completing formation of the item. Also provided is a method of forming ecoceramic-based tooling and composite components using the tooling.

20250324001